Proposal for a New Energy Label

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Proposal for a New Energy Label

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1 Abstract

Energy labeling is believed to have great impact on the energy efficiency of household appliances sold. Many different labeling schemes exist around the world. As far as is known, none of these facilitates the easy tightening of specifications to keep up with technological advancements.

The present proposed labeling scheme is simple and eliminates the above problem. The label simply consists of a *year*. That year would represent the year in which the performance of the product in question is/was state of the art. Each year the authorities would define the requirements for next year's label. It should be easily understandable by everybody: the more recent the year the better the product.

The scheme readily lends itself for an almost unlimited variety of products, and would also cover properties other than energy consumption. It is always up to date, it is globally applicable, and it encourages manufacturers to continually improve their products.

2 Examples of Existing Energy Labels

Many existing labeling schemes seem to have been designed without *dynamic labeling* in mind, i.e. the revision at regular intervals to keep up with technological advancements. If labeling is not kept up to date manufacturers are not encouraged to improve their products, and consumers cannot rely on the labeling to select the better product.

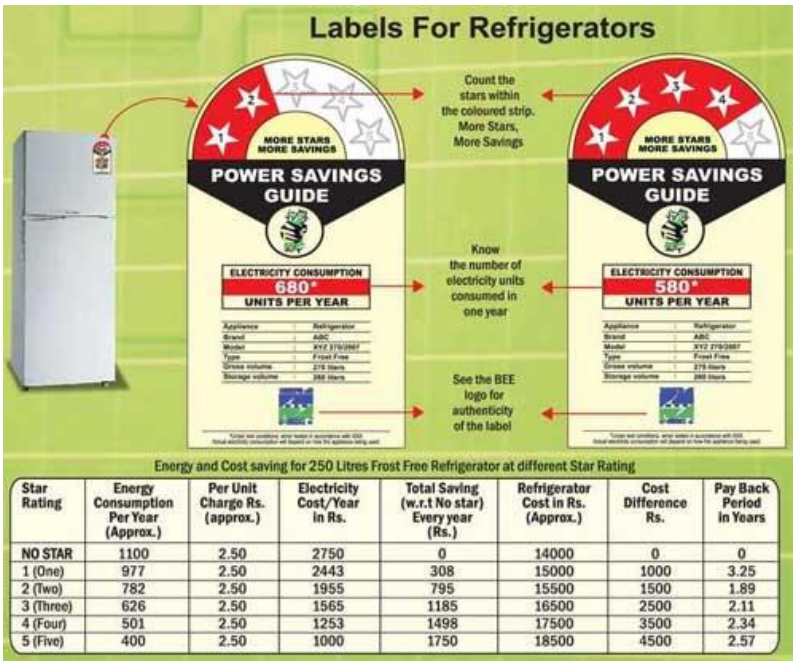
As it became inevitable existing labeling ranges have been extended essentially in two ways:

- Extending scales by adding more grades
- Tightening specifications for existing grades

Below a few examples of existing labels, selected at random, will be presented, some of them with extensions.

Figure 1 shows a Singapore energy label for an air conditioner. The energy efficiency is denoted by zero to four check marks; the more check marks the better. It is not known if and how extensions are planned [3].

Figure 1. Singapore air conditioner energy label



Energy and Cost saving for 250 Litres Frost Free Refrigerator at different Star Rating

Star Rating	Energy Consumption Per Year (Approx.)	Per Unit Charge Rs. (approx.)	Electricity Cost/Year in Rs.	Total Saving (w.r.t No star) Every year (Rs.)	Refrigerator Cost in Rs. (Approx.)	Cost Difference Rs.	Pay Back Period in Years
NO STAR	1100	2.50	2750	0	14000	0	0
1 (One)	977	2.50	2443	308	15000	1000	3.25
2 (Two)	782	2.50	1955	795	15500	1500	1.89
3 (Three)	626	2.50	1565	1185	16500	2500	2.11
4 (Four)	501	2.50	1253	1498	17500	3500	2.34
5 (Five)	400	2.50	1000	1750	18500	4500	2.57

Figure 2. Indian energy labels

The Indian refrigerator energy label (Figure 2) features a one to five star scheme; the more stars the better. It is not known whether or not plans exist to extend the range [4].

The Chinese label (Figure 3) resembles the European A...G label, except the grades are numbered 1 to 5, where in this case 1 denotes the more efficient product. It is not known if and how extensions are planned [5].

Figure 3. Chinese energy label

The Building Energy Rating (BER) adopted in Ireland is shown in Figure 4. It includes no less than 13 grades: A1, A2, A3, B1, B2, B3, C1...F, G. It would be more easy to grasp (though less colorful) could it be expressed as a single year. It is not known if and how extensions are planned [6].

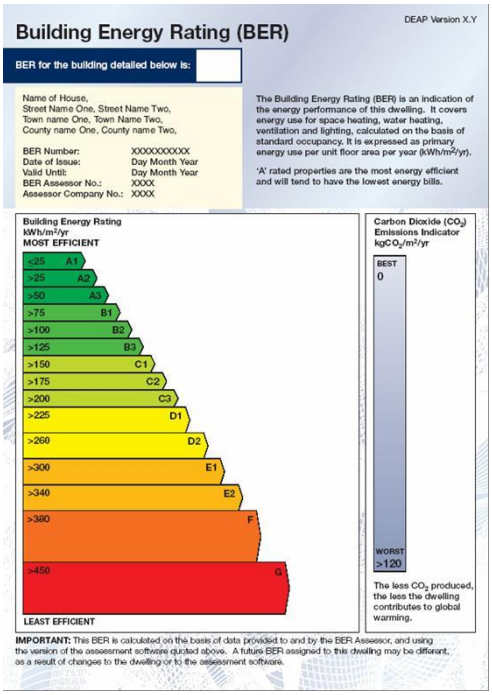


Figure 4. Building Energy Rating

The American Energy Star (Figure 5) is an example of a label without any grades. A certain product either earns the Star or it doesn't. The requirements are not very strict. They are generally only tigh-

Figure 5. The American Energy Star label has no grades

tened once Star qualified products in a particular category exceed a market share of 50% [7]. Thus there isn't much incentive for manufacturers to improve their products, nor for consumers to select the better product.

The Thai energy label, shown for an air conditioner in Figure 6, is graded 1 to 5. In this case the higher number denotes the more energy efficient product. The proposed updating principle is keeping grades but adding a year that defines when the specifications were updated. In the figure the label to the right has had the year "2006" added [8]. A similar measure has been proposed for the European label. The user has no way of knowing whether or not an old grade 5 is better than a new grade 4.

Figure 6. Thai energy labels. The label to the right was updated in 2006.

The Australian 6-star energy label (Figure 7) has been extended by a 10-star label featuring 4 "super efficiency" ratings, gaining some respite. The more stars the better [9].

Figure 7. Australian 6-star and 10-star energy labels

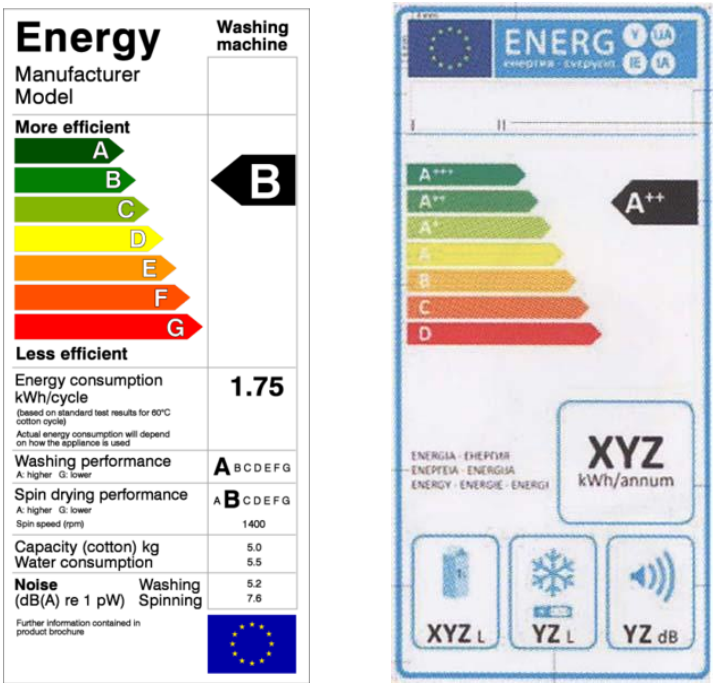


Figure 8. Ordinary and extended European energy label

The ordinary EU energy label is shown in Figure 8, left, for a clothes washer. It features a 7-grade scale A through G, where A denotes the better product. This scale has been extended for certain appliance types by adding three new grades: A+, A++, and A+++, and eliminating the grades E, F, and G (Figure 8, right) [1]. In this way a couple of years' respite has been obtained, at the same time adding to user confusion.

Figure 9. The European A rating is not up to date

Figure 9 is taken from a recent Danish advertisement. It is an example of a manufacturer pointing out that the advertised dishwasher, among other things, consumes 10% less energy than required for a European A grade. It proves that energy labeling in this case is not up to date.

3 Future Energy Labels

When the European A+++ label becomes obsolete, should it be extended to something like the one suggested in Figure 10? The user might have difficulties counting the plusses.

Figure 10. Future EU energy label?

Figure 11 shows a rival for the new scheme proposed in this paper, a label proposed by CECED (Conseil Européen de la Construction Electro-Domestique, European Committee of Domestic Equipment Manufacturers). The grades are numbered 1 through 7, where in this case the higher number denotes the more energy efficient product. In the future, when improvements occur, the grade "1"

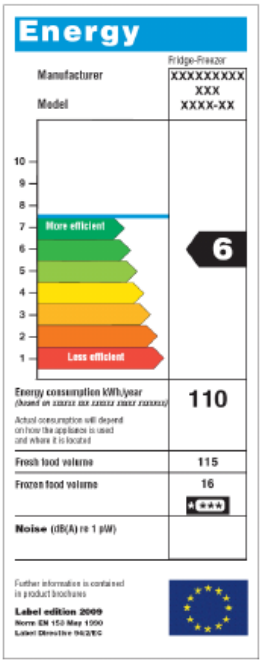


Figure 11. Extendable label proposed by CECED

would be eliminated and a new grade "8" added, etc., *ad infinitum* [2]. Thus this scheme presents an effective solution to the problem how to adapt to future requirements. However, the lay user has no way of knowing which grade currently represents the state of the art.

4 New Proposed Energy Label

The new label proposed in this paper simply consists of a *year*. That year would represent the year in which the performance of the appliance in question is/was state of the art.

Each year the authorities would determine how much next year's requirements should be tightened compared to those of the current year. The degree of improvement would be defined by the current rate of technological advancement. One should attempt to always be slightly ahead of time, so that only on rare occasions will a product appear on the market that carries the current year on its label. In other words, the requirements of next year's label should be defined to somewhat exceed the performance that is expected to appear on the market during that year. In that way there is always room for manufacturers to improve the labeling of their products.

This labeling scheme is simple and expected to be easier to understand by everybody than most existing labels: the more recent the year the better the product. For instance, a refrigerator labeled "2009" would perform at least like the most efficient refrigerators available in 2009, one labeled "2010" would be somewhat better, and so on.

The scheme readily lends itself to a variety of products, like electric and electronic equipment, cars, tires, buildings, lighting, heating, cooling, ventilation, doors, windows, etc., and would also cover properties other than energy consumption, e.g. performance, environmental impact, safety, and ergonomics.

It is believed to be globally applicable, except maybe in places where people cannot read a year number. Adjustments may be necessary to adapt to calendars other than the Gregorian.

A simple example of a washing machine label according to this idea, based on the ordinary European label, is shown in Figure 12. It is illustrated how some properties, like water consumption, are graded individually. An actual label should of course be rendered more aesthetically appealing by a capable

Figure 12. Example of new proposed energy label for a washing machine

artist, maybe adding a flower, green Earth, or other pleasant symbol.

5 Conclusion

As far as is known no existing energy labeling scheme is well suited for dynamic labeling, at the same time being easily understandable by everybody. This has been shown for a number of existing and proposed schemes. (Of course there is still a chance that such a scheme does exist without the author's knowledge).

Conversely, the topical proposed scheme

- Is always up to date
- Is easily understandable by everybody
- Covers a variety of products
- Covers a variety of properties
- Is globally applicable
- Encourages manufacturers to improve their products
- Encourages consumers to pick the best available product

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